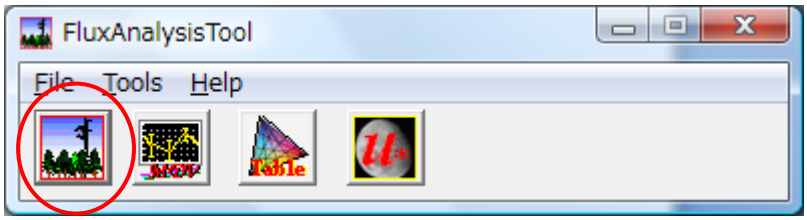
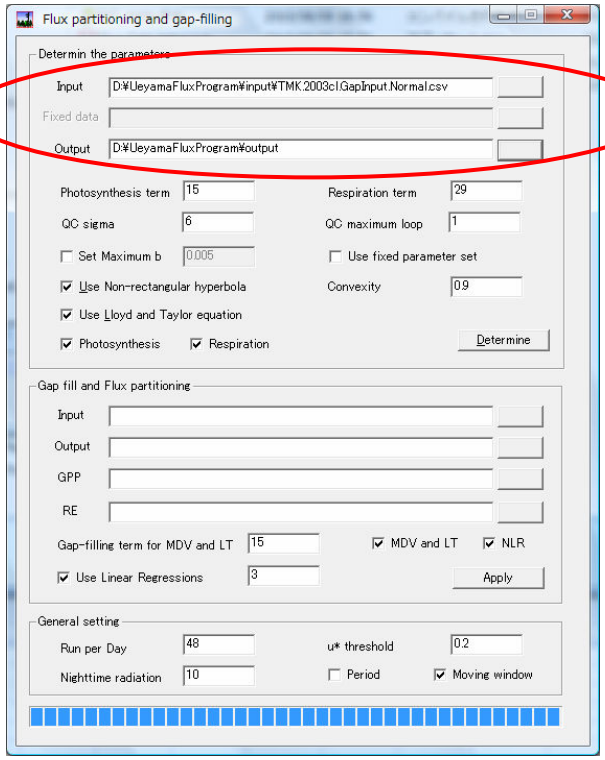
Getting Started with Ueyama FluxAnalysis Tool

Note:
This Getting Started manual guides you through the most basic procedure of gap-filling flux data using Ueyama FluxAnalysisTool. The guide assumes program execution without changing default program settings. For detailed instructions, refer to the Help file.

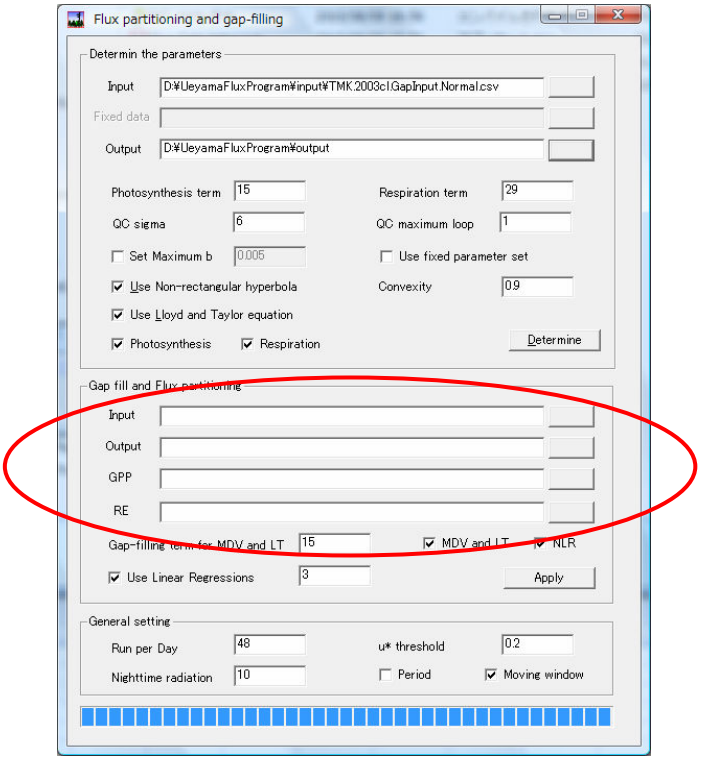
1. Prepare input data
2. Start FluxTools/exe/FluxAnalysisTool.exe
3. Click on the left button on the tool palette that appeared as below.



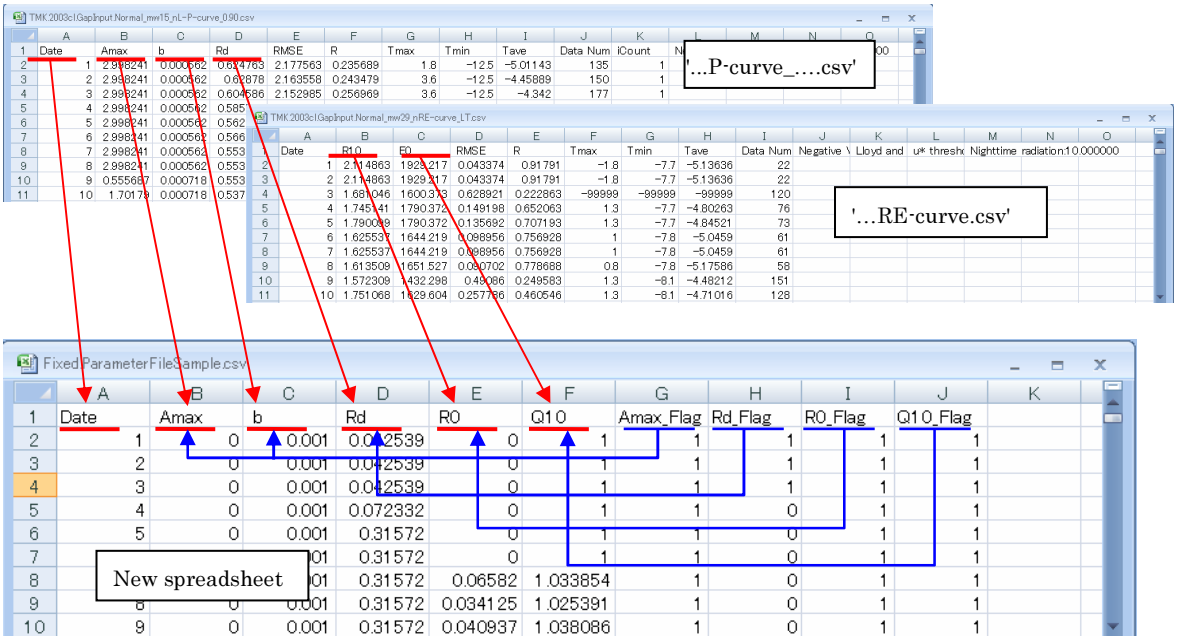
4. Once 'Flux partitioning and gap-filling' dialogue window appears, in 'Determine the parameters' section in the top half of the window, click on the button next to Input field, and select your input file from the file viewer that appears. In Output field, select the folder to store the output files that will be created during the program execution.



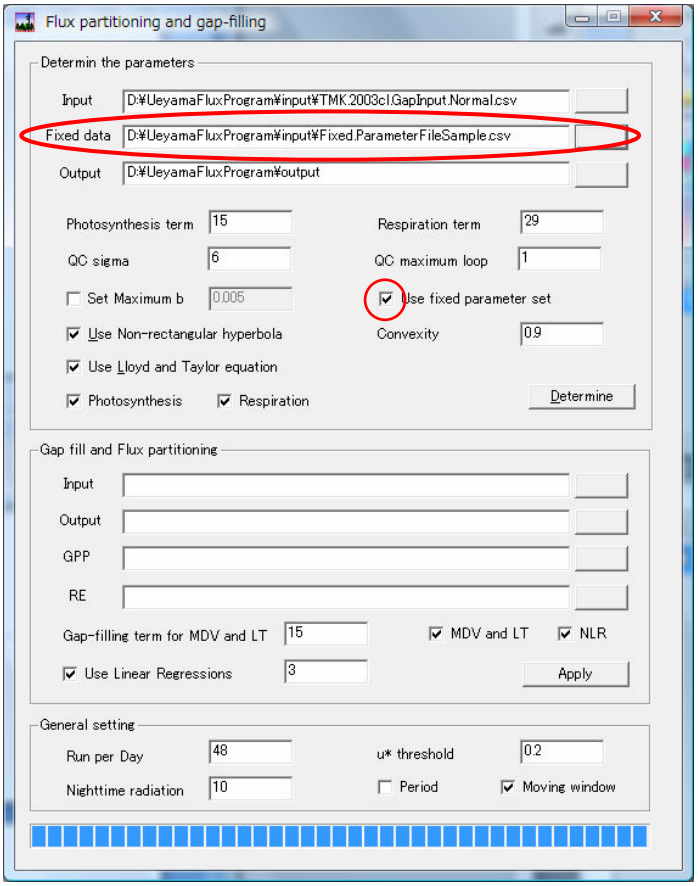
5. Click on Determine button at the right bottom corner of 'Determine the parameters' section.
6. Once the blue bar at the bottom of the window reached the end, you will see a pop-up message "The calculation has been successfully done!"
7. Open the output file created in the folder that you specified in the step 4 above, and confirm that there are new files named like '...P-curve_….csv', '…RE-curve.csv'（the words before and after 'P-curve', 'RE-curve' are variable depending on the program settings）.
8. In the 'Gap fill and Flux partitioning' section in the bottom half of the same window, specify Input, Output, GPP, and RE files. Input file is the same as the one you specified in the step 4 above. For Output, select the folder to store the output files. For GPP and RE, select the '...P-curve_….csv' file and '…RE-curve.csv' respectively that have been created as a result of the previous 'Determine' process.



9. Click on 'Apply' button at the right bottom corner of 'Gap fill and Flux partitioning' section.
10. Once the blue bar at the bottom of the window reached the end, you will see the pop-up message "The calculation has been successfully done!"
11. Open the output folder you specified in the step 8 above, and confirm that there are new files named like '…filled_carbon_fluxes.csv', '…gap_filled_mdv_lt.csv'.
12. The gap-filled flux data are stored in '...final.csv'. Check the quality of the gap-filling results. If you are satisfied with the gap-filling results, your work is done.
13. If the gap-filling results have some errors or are unrealistic, you might want to try gap-filling using manually specified parameters for Light-Photosynthesis Curves or Temperature-Respiration Curves. To do so, proceed to the following sections.
14. To create non-linear equation - fixed parameter file (refer to Help I-2-1), open the '...P-curve_….csv' and '…RE-curve.csv' that have been created in the step 7 above in Excel or some other spreadsheet program, and copy columns 'Date', 'Amax', 'b', 'Rd' in '...P-curve_….csv', and paste them into a new blank spreadsheet. Copy also 'R0' and 'E0' columns in '…RE-curve.csv' and paste to the right of 'Date', etc. Further to the right of the pasted 'Date', 'Amax', 'b', 'Rd', 'R0', 'E0' (or Q10) columns, create new columns named something like 'Amax_Flag', 'Rd_Flag', 'R0_Flag', 'E0_Flag' (or 'Q10_Flag') (field names can be customized) to store their flag values, and initially fill these columns with '0's.



15. Manually modify the values of 'Date', 'Amax', 'b', 'Rd', 'R0', 'E0' (or Q10) columns as necessary. Then change the flag values of the corresponding parameter and the date from '0' to '1' (for example, if 'Amax' and 'b' of date 251 is modified, put '1' in 'Amax_Flag' of date 251. 'Rd_Flag' is for 'Rd', and so on).
16. Once the modification of parameters is done, save the newly created parameter file (as csv file) in the input folder after saving it with an appropriate name.
17. Repeat the steps 4 to 7. In the 'Fixed data' field, specify the non-linear equation parameter file you created in step 14, and put a check mark next to 'Use fixed parameter set'.



18. Click on Determine button.
19. Repeat the steps 8 to 12.
20. If the gap-filling results are still erroneous or unrealistic, try modification of non-linear equation parameters again, or try program execution with different program settings and repeat the steps 4 to 19.